

## **REMARKS**

### **Status of the Claims**

Upon entry of the amendment above, claims 1-9 and 11-21 will be pending, claims 1, 7, 11, and 14 being independent.

### **Summary of the Office Action**

Claim 10 is withdrawn from consideration pursuant to 37 CFR §1.142(b) as being drawn to a non-elected invention.

Claims 7, 8, 17, and 18 are indicated to contain allowable subject matter.

The drawings are objected to for including a reference numeral, viz., not mentioned in the description.

The abstract of the disclosure; the title of the invention; and the disclosure are objected to, primarily with regard to the expression "rim base."

Claims 1-9 and 11-19 are objected to for informalities.

Claims 1-9 and 11-21 are rejected under 35 USC §112, second paragraph, as being indefinite.

Claims 11-13, 16, 20, and 21 are rejected under 35 USC §102(b) as being anticipated by NAKASAKI (U.S. Patent No. 3,965,957).

Claims 1-3, 5, and 6 are rejected under 35 USC §103(a) as being unpatentable over LACOMBE et al. (U.S. Patent No. 6,257,676 or, perhaps, U.S. Patent No. 6,443,533, hereafter "LACOMBE") in view of NAKASAKI.

Claim 4 is rejected under 35 USC §103(a) as being unpatentable over LACOMBE in view of NAKASAKI and SIMPSON (U.S. Patent No. 4,108,232).

Claim 14 is rejected under 35 USC §103(a) as being unpatentable over NAKASAKI in view of SIMPSON.

Claim 15 is rejected under 35 USC §103(a) as being unpatentable over NAKASAKI.

Claim 19 is rejected under 35 USC §103(a) as being unpatentable over NAKASAKI in view of CHEN (U.S. Patent No. 6,428,115).

## **Response to the Office Action**

### **A. Summary of the Amendment**

Applicants have presented an amendment which is believed to place the instant application in condition for allowance. The specific amendments are summarized here and addressed in greater detail below.

First, Applicants have presented a substitute specification, in the form of both a so-called "marked-up" version and a "clean" version, pursuant to 37 CFR §1.125. No prohibited new matter has been added.

Therein, occurrences of "rim base" have been changed to "sealing strip" so as (as the Examiner correctly noted, and for which Applicants are appreciative) to differentiate between that which is shown, exemplarily, in Fig. 2, as an insert to a wheel rim, from that which is a constituent part of the rim itself between the flanges, for example.

In preparing the substitute specification, Applicants had in mind the various issues raised by the Examiner in his objections and the indefiniteness rejection.

Regarding the objection to the drawing for including reference numeral "48" which was not referenced in the specification, Applicants have amended paragraph 0053 to make reference to numeral "48."

Finally, regarding the claims, allowable dependent claims 7 and 17 have been rewritten in independent form and the ends of independent claims 1 and 11 have been amended to include a limitation, which references radially inwardly facing tire-retaining surfaces (*i.e.*, downwardly facing surfaces in the drawing, such as in Figs. 2-7) of the lips of the sealing strip which retain the tire. NAGASAKI's sealing strip 4 includes no such surfaces.

**B. Withdrawal of Objection to the Drawing**

The drawing is objected to for including reference numeral "48" which had not been referenced in the specification.

In the amendment to the specification, made in the attached substitute specification, Applicants have amended paragraph 0053 to include reference numeral "48."

Accordingly, reconsideration and withdrawal of the objection to the drawing is kindly requested.

**C. Withdrawal of Objection to the Abstract of the Disclosure**

In response to the objection made to the Abstract of the Disclosure, Applicants have replaced the expression "rim base" with "sealing strip."

Accordingly, reconsideration and withdrawal of the objection is kindly requested.

**D. Withdrawal of Objection to the Title of the Invention**

In response to the objection made to the Title of the Invention, Applicants have replaced the expression "rim base" with "sealing strip."

Accordingly, reconsideration and withdrawal of the objection is kindly requested.

**E. Withdrawal of Objection to the Disclosure**

In response to the objection made to the disclosure, Applicants have replaced occurrences of the expression "rim base" with "sealing strip."

Accordingly, reconsideration and withdrawal of the objection is kindly requested.

**F. Withdrawal of Objection to the Claims**

In response to the objection made to claims 1-9 and 11-19, Applicants have replaced the expression "rim base" with "sealing strip."

Accordingly, reconsideration and withdrawal of the objection to claims 1-9 and 11-19

is kindly requested.

Claim 2 is objected to (line 4 of the original claim), the Examiner suggesting that the term "said" be added prior to the term "uppermost."

Applicants have not adopted that suggestion, since they believe it would be inconsistent with the meaning of the claim and the disclosure. The occurrence of "uppermost ends" in line 4 of claim 2 refers to the uppermost ends of the lips "*of the flanges of the rim,*" beneath which are the uppermost ends of the lips of the *sealing strip*. To clarify the claim and add antecedent basis, therefore, Applicants have added a separate line in claim 2, viz., "the lips of the flanges of the rim include uppermost ends."

In view of the amendment to claim 2, reconsideration and withdrawal of the objection to claim 2 is kindly requested.

Claim 16 is objected to with regard to the expression "grooves or ridges," for which it is suggested that "grooves and ridges" be substituted therefor.

Applicants have not adopted that suggestion, since they believe it would be inconsistent with the meaning of the claim and disclosure. However, Applicants *did* delete the term "projecting," in the event one were to be troubled by a reading of the limitation that would have grooves described as projecting (which was not Applicants' intention).

Claim 16 encompasses a structural detail shown, as an example, in Fig. 6, which is described in paragraphs 0058 and 0059 of the specification. In Fig. 6, projecting ridges 60, 61 of the rim well are shown to be engaged within corresponding grooves 62, 63 of the sealing strip. Paragraph 0059 provides for the reverse structure, *i.e.*, whereby the sealing strip would have projecting ridges engaging in grooves of the rim well. Therefore, for the purpose of encompassing either variation, claim 16 refers to the rim well as having "ridges

or grooves” and that the “grooves or ridges” of the sealing strip mechanically connect with the “ridges or grooves,” respectively. Thus, term “or” is proper and consistent with Applicants’ disclosure and the term “respectively” provides for the grammatical precision whereby a ridge connects with a groove and a groove connects with a ridge.

In view of the amendment to claim 16 (*i.e.*, deletion of “projecting”) and the foregoing comments, reconsideration and withdrawal of the objection to claim 16 is kindly requested.

**G. Withdrawal of Rejection Under 35 USC §112, Second Paragraph**

Reconsideration and withdrawal of the rejection of claims 1-9 and 11-21 under 35 USC §112, second paragraph, is requested for the following reasons.

First, with regard to claim 1, Applicants have changed “the channel having an upper bridge” in line 3 (of original claim 1) with “ the outer annular channel having an upper bridge,” so as to clarify which channel has the upper bridge. In this regard, although Applicants agree that the rim includes an upper bridge, because the annular channel is part of the rim, the annular channel has an upper bridge, as explained in paragraph 0022 of the specification. With reference to Fig. 1, paragraph 0022 states that the annular channel 10 is comprised by the flanges 8, 9, and the upper bridge 4.

With additional reference to claim 1, the rejection comments that it is unclear what element of the invention includes “opposite lateral edges.” In this regard, Applicants direct attention to paragraph 0024 of the specification, which explains, with reference to Fig. 1, that “lateral edges 16 and 17 ... provide the junction between the well 15 and the flanges 8 and 9.” Accordingly, the lateral edges 16, 17 border the central well 15 in Fig. 1.

With still further reference to claim 1, Applicants have amended claim 1 to change the inadvertent occurrence of “lateral extension” to “lateral extensions”.

With reference to claims 9 and 19, and in response to the query posed, Applicants confirm that the valve hole in these claims is an element of the “sealing strip” (*i.e.*, formerly the “rim base”). Applicants intend to encompass with these two claims the structure shown, for example, in Fig. 5, which includes a valve hole 49 which includes a flange 51.

With further reference to claim 9, Applicants have deleted the term “interiorly” because they believe the claim is improved by referring, instead, to the direction “radially inward” (as used in claim 19).

Lastly, claim 11 is objected to because “it is unclear what direction the pair of lips extend ‘inward’ in line 21.” In response, Applicants have clarified that portion of claim 11 to refer to the direction as “*laterally inward*.”

In this regard, Applicants note that “laterally inward” refers to a direction *toward* the median plane (such as plane 14 in Fig. 1 and plane 27 in Fig. 2). “Laterally outward,” of course, refers to a direction *away* from the median plane. Also, “radially inward” refers, in the drawing figures, to a downward direction.

Applicants note that, in rewriting allowable claims 7 and 17 in independent form, they ensured that the amendments that had been made to claims 1 and 11 have been made to claims 7 and 17, as amended.

In view of the amendments and foregoing comments, reconsideration and withdrawal of the rejection under 35 USC §112, second paragraph, is kindly requested.

#### **H. No Rejection of Claim 9 Under 35 USC §102 or §103**

Applicants note that no rejection of claim 9 has been made on the basis of prior art, *i.e.*, under 35 USC §102 or §103, nor was the subject matter of claim 9 indicated to be allowable. Nevertheless, Applicants believe they have placed the application in condition for allowance, in any event, in view of the reasons given below and the amendments to the claims and specification.

**I. Withdrawal of Rejections Under 35 USC §102(b) and §103(a)**

Applicants acknowledge that various ones of their claims are rejected in six different grounds, based wholly or partly upon the disclosure of NAKASAKI. Although Applicants might take issue with the rejections for other reasons, they submit that each of the rejections relies upon an interpretation of Applicants' claims in a way that was not intended and which, based upon amendments that have been made above, have been overcome.

Accordingly, rather than address each of the six grounds of rejection individually, Applicants will address the deficiencies of NAKASAKI and, whether taken alone, in the rejection under 35 USC §102(b) (claims 11-13, 16, 20, 21) and in the rejection under 35 USC §103(a) (claim 15), or taken in combination with other references in additional grounds of rejection under 35 USC §103(a), Applicants submit that none of the references teach or suggest Applicants' invention, particularly as now claimed. Reconsideration and withdrawal of the rejections are, therefore, requested.

In a wheel rim which can be used in connection with Applicants' invention, as shown, for example, in Fig. 1, lips 12, 13 include tire-retaining surfaces 12a, 13a, as explained in paragraph 0023. Paragraph 0023 had originally described the surfaces 12a, 13a as extending perpendicular or substantially perpendicular to the median plane 14 of the rim 1, Applicants have added, in the attached substitute specification, that these surfaces (12a, 13a) also face generally radially inward (*i.e.*, generally downward in the drawing), as can be seen in the drawing.

Similarly, as described in paragraph 0035 of the specification, when a sealing strip according to the invention is fitted into a wheel rim, the lips 32, 33 of the sealing strip are housed under, or radially inward, of the lips 12, 13 of the rim. In the substitute specification,

Applicants have added that, like the surfaces 12a, 13a of the rim 1, the lips 32, 33 of the sealing strip of the invention have tire-retaining surfaces that face generally inwardly.

In addition, each of independent claims 1 and 11 has been amended to emphasize this limitation. For example, at the end of each of claims 1 and 11 is the following limitation: each of said two lips of the sealing strip having a generally radially inwardly facing tire retaining surface.

Of course, as shown, the tire-retaining surfaces of the sealing strip and the rim do not face precisely vertically downwardly, *i.e.*, or precisely radially inwardly. Nevertheless, the face “generally” so, to achieve the purpose of preventing the beads of a tire from rising out of their seatings and separate from the rim, thereby improving upon the problem mentioned, for example, in paragraph 0012 in the background of the invention section of the specification, and consistent with the object of the invention mentioned in paragraph 0013.

By contrast, the ends 4a of the strip 4 of NAKASAKI extend upwardly and do not have “radially inwardly facing tire-retaining surfaces.”

Accordingly, NAKASAKI fails to anticipate Applicants’ invention and fails to have rendered Applicants’ invention obvious.

For the purpose of emphasizing the point Applicants are making here, they have attached annotated copies of Figs. 1-4 (*i.e.*, sheets 1/4 and 2/4) , whereby the generally radially inwardly facing surfaces of the rim and the sealing strip are highlighted.

At least for the foregoing reasons, reconsideration and withdrawal of the rejections under 35 USC §102 and §103 are kindly requested.



### **SUMMARY AND CONCLUSION**

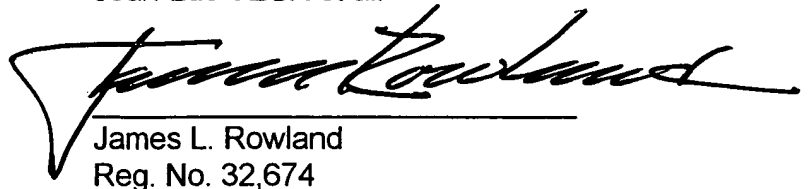
The grounds of objection and rejection advanced in the Office action have been addressed and are believed to be overcome. Reconsideration and allowance are respectfully requested in view of the amendment and remarks above.

A check is attached for payment of a claim fee. No additional fee is believed to be due at this time. However, the Commissioner is authorized to charge any fee required for acceptance of this reply as timely and complete to Deposit Account No. 19-0089.

Further, although no extension of time is believed to be necessary at this time, if it were to be found that an extension of time were necessary to render this reply timely and/or complete, Applicant requests an extension of time under 37 CFR §1.136(a) in the necessary increment(s) of month(s) to render this reply timely and/or complete, and the Commissioner is authorized to charge any necessary extension of time fee to Deposit Account No. 19-0089.

Any comments or questions concerning this application can be directed to the undersigned at the telephone or fax number given below.

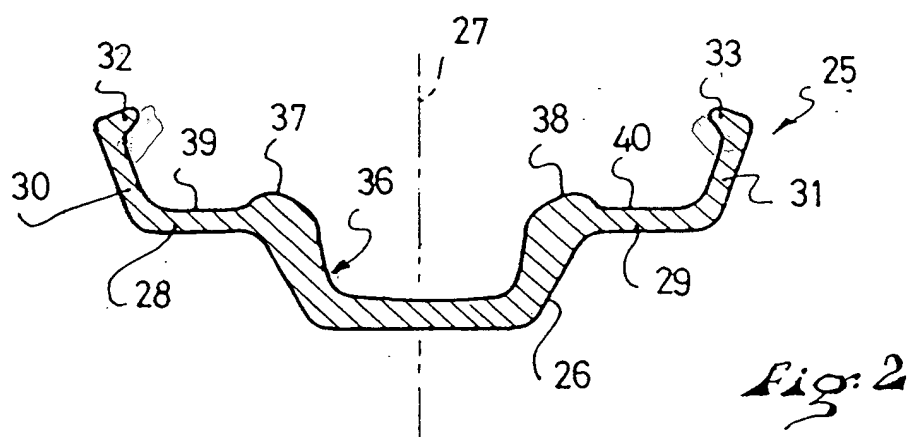
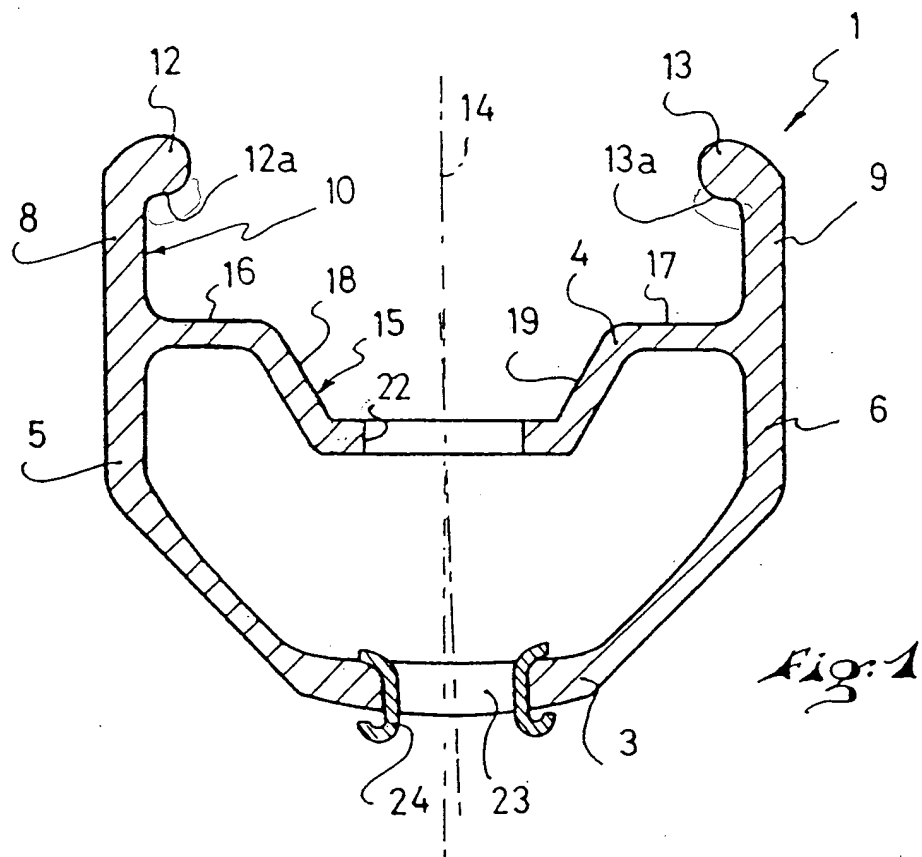
Respectfully submitted,  
Jean-Luc VEUX et al.

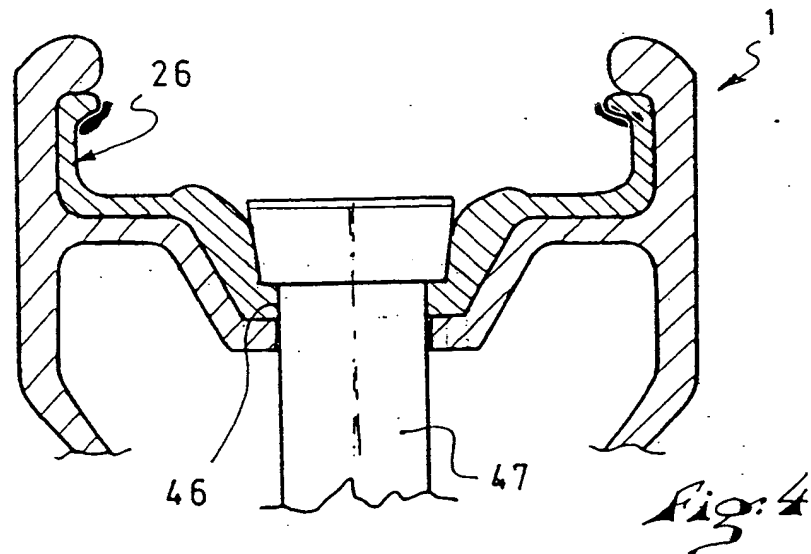
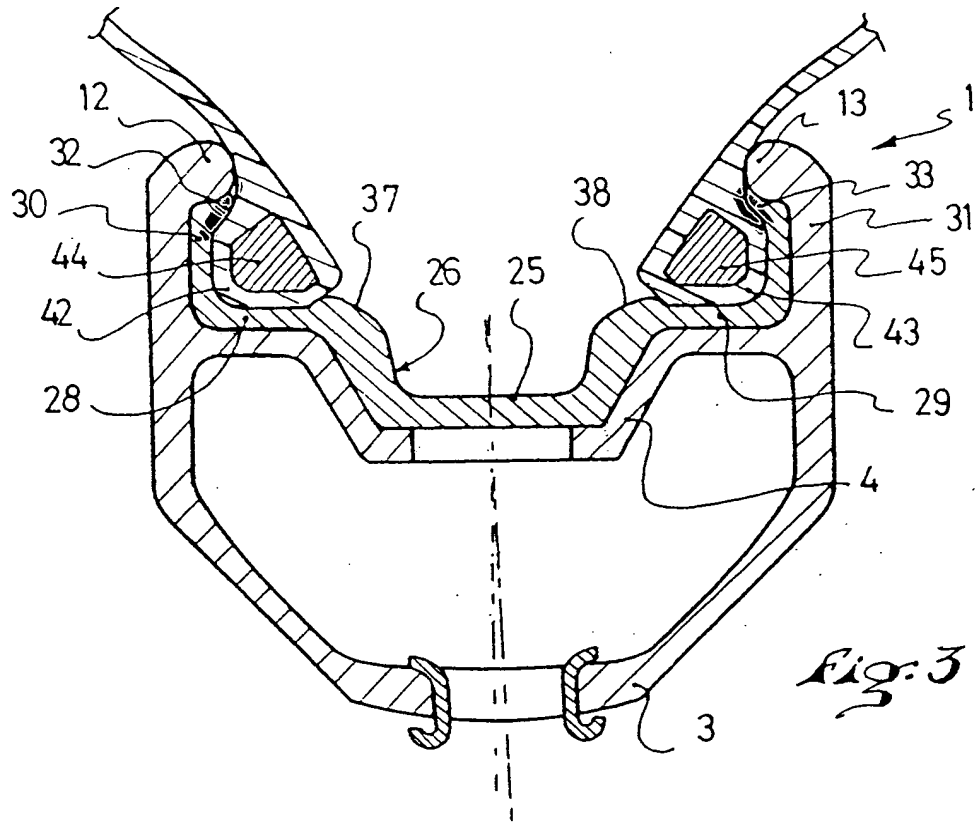


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Attachments: • Substitute Specification – Marked-Up Version  
• Substitute Specification – Clean Version  
• Annotated Copies of Figs. 1-4





**SUBSTITUTE SPECIFICATION  
for U.S. Patent Application No. 10/715,539  
(Marked-Up Version)**

TITLE OF THE INVENTION

**SEALING STRIP BASE FOR A RIM OF A WHEEL  
AND A RIM HAVING A SEALING STRIP SUCH A BASE**

INVENTORS

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**SEALING STRIP BASE FOR A RIM OF A WHEEL**  
**AND A RIM HAVING SUCH A BASE SEALING STRIP**

**CROSS-REFERENCE TO RELATED APPLICATION**

**[0001]** This application is based upon French Patent Application No. 02.14910, filed November 20, 2002, the disclosure of which is hereby incorporated by reference thereto in its entirety and the priority of which is hereby claimed under 35 U.S.C. §119.

**BACKGROUND OF THE INVENTION**

1. **Field of the Invention**

**[0002]** The invention relates to a sealing strip rim-base to be used with the rim of a wheel, such as the rim of a bicycle wheel, as well as to a rim equipped with such a sealing strip rim-base. The invention also relates to a wheel, particularly a bicycle wheel, having a rim equipped with such a sealing strip rim-base.

**[0003]** More specifically, the invention relates to a sealing strip rim-base that is provided to facilitate the mounting of a tubeless tire.

2. **Description of Background and Relevant Information**

**[0004]** Traditionally, a rim has an outer annular channel provided to receive a pneumatic tire, and the bridge that demarcates the base of this channel is bored with openings that are used to position the spoke nipples or the spokes themselves according to the spoke arrangement that is implemented for the wheel.

**[0005]** The use of a tubeless tire mounted upon the rim has advantages including, in particular, less weight of the complete wheel, less inertia, a better contact of the wheel with the ground and, consequently, an improved grip with the surface of the ground, and less risk of a flat because of a reduced risk of pinching.

**[0006]** There are wheels for tubeless tires for which the upper bridge is not bored with openings for spokes. Because this bridge is not bored, it is therefore air impermeable. Such a construction is described, for example, in the patent publication EP 893 280 and U.S. Patent No. 6,257,676.

**[0007]** For conventional rims whose upper bridge is bored with openings, it has been desired to cover this bridge with a strip of material that blocks the openings of the bridge in a manner that is air impermeable.

**[0008]** Such constructions are described, for example, in patent documents DE 37 15 669, EP 615 865, U.S. Patent No. 5,538,058, FR 2 744 953, and DE 201 08 416. There are also devices commercially made by MAXXIS<sup>®</sup>, TREK<sup>®</sup>, and PANARACER<sup>®</sup>.

**[0009]** Existing systems yield good results; however, they are not completely satisfactory. Indeed, there are numerous problems to overcome.

**[0010]** First of all, there is the mounting of the strip of material itself on the rim, its retention on the rim, and the mounting of the tire. Secondly, there is the problem of inflating the tire and, more particularly, the problem of inflating with a pump having a low output, i.e., a light-duty pump.

**[0011]** Additionally, there is the problem of the seal, or impermeability, between the tire and the base of the rim.

**[0012]** The shape of a rim that has, on the outside, the shape described in EP 893 280 and U.S. Patent No. 6,257,676 has yielded good results with regard to primary inflation. However, it has been noted that, particularly in the case of high pressure, the tire beads can rise out of their seatings. There is then the risk that the bead can locally separate from the base of the rim. Air can then pass behind the strip of material rim-base, i.e., between the strip of material rim-base and the rim itself. This air passes into the rim housing and escapes through the openings of the housing. This air is lost, generating a loss of pressure in the tire.

### SUMMARY OF THE INVENTION

**[0013]** An object of the invention is to provide a sealing strip base for a rim of a wheel, such as, in particular, a wheel for a tubeless tire, whereby the sealing strip rim-base, and the wheel and rim provided with such sealing strip rim-base, offers an improved performance with respect to retaining the tire on the rim under pressure, particularly under high pressure.

**[0014]** Additional objects of the invention are to provide a rim of a wheel that incorporates such a sealing strip rim-base, as well as a wheel incorporating such rim and sealing strip rim-base.

**[0015]** Other objects and advantages of the invention will become apparent from the following description.

**[0016]** The sealing strip rim-base according to the invention is provided to be used with a so-called box section rim, or double-walled rim, the rim having a radially outer annular channel provided to receive the tire, the channel being demarcated by an upper bridge with

a central well, or groove, bordered with two lateral seats, and two lateral flanges substantially parallel to the radial plane of the rim with two opposing lips at the ends of the flanges. A sealing strip rim-base, according to the invention, is formed by a continuous annular layer or strip. The sealing strip rim-base has in cross section a generally U-shaped depression to be engaged in the central groove of the rim, two lateral extensions provided to rest on the lateral edges of the rim, and two raised walls provided to rise along the flanges of the rim.

**[0017]** The walls of the sealing strip rim-base are extended by two lips that project laterally inwardly of the channel with respect to the walls of the sealing strip rim-base, the lips of the sealing strip rim-base being provided to be positioned beneath, or not radially beyond, the lips of the flanges of the rim.

**[0018]** In this manner, even if the tire beads were to lose contact with the lateral extensions of the sealing strip rim-base, the beads would remain in contact with the additional lips of the sealing strip rim-base, with which they are maintained against, which prevents air from escaping between the rim and the sealing strip rim-base. In this way, the sealing strip rim-base according to the invention improves the sealing, or impermeability, of the tire with respect to the rim.

#### BRIEF DESCRIPTION OF DRAWINGS

**[0019]** The invention will be better understood with reference to the following description and to the attached drawings that are an integral part thereof:

FIG. 1 is a cross-sectional view of a rim in the area of a spoke hole;



FIG. 2 shows in a transverse cross section a sealing strip rim-base provided to cooperate with the rim of FIG. 1;

FIG. 3 shows in a transverse cross section the sealing strip rim-base positioned in the annular channel of the rim;

FIG. 4 relates to a first method for assembling the valve;

FIG. 5 schematically shows another method for assembling the valve;

FIG. 6 relates to an alternative embodiment of the invention;

FIG. 7 shows in cross section an alternative construction;

FIG. 8 shows a tool for positioning the sealing strip rim-base.

### DETAILED DESCRIPTION OF THE INVENTION

**[0020]** FIG. 1 shows a rim 1 in a transverse cross section. Conventionally speaking, the rim 1 is made from a channel-shaped section, such as can be obtained by extrusion, that is cut to a predetermined length and then bent to form a hoop or ring. The two ends of the ring are preferably joined by a welding technique to provide a strong connection in this area. Other methods for joining the ends could also be used.

**[0021]** According to the embodiment shown, the rim 1 has a box structure in transverse cross section. The box is demarcated by a lower bridge 3, an upper bridge 4, and a pair of lateral walls 5 and 6 which connect the two bridges.

**[0022]** The lateral walls are radially extended by flanges 8 and 9. The flanges 8 and 9 define, with the upper bridge 4, an annular channel 10 for receiving the tire.

**[0023]** At their top, as shown in FIG. 1, the flanges 8 and 9 have opposed projections or lips 12 and 13 that close the channel. These lips are ~~provide~~ provided to retain the lateral walls of the tire mounted upon the rim 1. According to the embodiment shown, each of the lips has a retaining surface 12a, 13a, respectively, that is perpendicular, or substantially perpendicular, to the median plane 14 of the rim 1. This plane is illustrated by a dotted and dashed line in FIG. 1. In other words, the retaining surfaces 12a, 13a face generally radially inwardly (i.e., downwardly in the drawing).

**[0024]** The upper bridge 4 has, in its median portion, a well 15 that forms a radial depression, i.e., an annular groove, in which the tire beads are introduced when the tire is being mounted on the rim. On each side of the well 15 the upper bridge has lateral edges 16 and 17 that provide the junction between the well 15 and the flanges 8 and 9.

**[0025]** According to the embodiment illustrated in FIG. 1, the lateral walls 18 and 19 of the well 15 are inclined and give the well a flared shape.

**[0026]** The form of the upper bridge 4 and that of the rim profile shown in the figures are not limiting, and other forms could also be used. In particular, the lateral walls 18, 19 of the well could have a different orientation, or they could be rounded. One could also have an additional bridge or one or more additional partitions inside of the box. Also, instead of being symmetrical, the rim profile could be asymmetrical.

**[0027]** As can be seen in the cross-sectional plane of FIG. 1, a plurality of openings 22 extend through the upper bridge 4 of the rim 1, and a plurality of openings 23, aligned or paired with the openings 22, extend through the lower bridge 3. In a known manner, the openings 23 are provided as a seat for the spoke nipples that are introduced into the box through the openings 22. The openings 23 can be alternatively offset on both sides of the

median plane of the rim with respect to the direction of the spokes once the wheel is assembled.

**[0028]** In order to improve the retention of the spoke nipple, an eyelet 24 is crimped in each of the openings 23. These are single eyelets. However, this is not limiting, and one could use double eyelets that connect the two bridges, or even use no eyelet at all.

**[0029]** The sealing strip rim-base 25 provided to be used with the rim of FIG. 1 is shown in FIG. 2 in transverse cross section.

**[0030]** The sealing strip rim-base 25 is provided to line the inside of the annular channel of the rim 1. On the outside, i.e., toward the top of FIG. 2, the sealing strip rim-base has a first shape provided to receive the tire, and on the interior, i.e., toward the bottom of FIG. 2, the sealing strip rim-base has a second shape provided to hug, i.e., to closely follow, the contour of the upper bridge 4 of the rim 1.

**[0031]** The sealing strip rim-base 25 is formed by an air impermeable continuous layer or ~~strip~~ that is relatively flexible, i.e., elastically deformable and sufficiently elastic in extension to facilitate its mounting on the rim. Another property of the material of the sealing strip rim-base is its temperature stability for resisting the heating of the rim that could occur during an extended period of braking.

**[0032]** For example, the sealing strip rim-base 25 can be made from a thermoplastic material, such as polypropylene. Other materials could also be used, particularly rubber, including synthetic rubber materials.

**[0033]** Preferably, the strip to be used for the sealing strip rim-base is manufactured by injection in a mold, without an apparent molding joint in the channel for receiving the tire. For instance, the mold has a fixed portion that provides the outer contour, and a movable portion that gives the inner contour. In this manner, the plane of the mold joint is on the inside of the strip. The flexibility of the strip facilitates its demolding, i.e., its removal from the fixed portion of the mold.

**[0034]** With reference to FIG. 2, the sealing strip rim-base 25 has a median depression 26 that is bordered by lateral extensions 28 and 29. The extensions 28, 29 are extended upwardly in the figure by walls 30, 31. At their upper ends, the walls 30, 31 have projecting lips 32, 33 that are oriented one toward the other in the direction of the median plane 27 of the sealing strip rim-base 25, i.e., the lips 32, 33 extend laterally inwardly from respective ones of the walls 30, 31. ~~The~~ This plane 27 is illustrated by the dotted and dashed line in FIG. 2.

**[0035]** The dimensions of the strip are determined so that, as seen in FIG. 3, the sealing strip rim-base 25 is positioned in the annular channel of the rim 1 and, in particular, so that the lips 32 and 33 are housed under, or radially inward of, the lips 12 and 13 of the rim. Thereby, like the retaining surfaces 12a, 13a of the rim 1, the lips 32, 33 of the sealing strip have retaining surfaces that face generally radially inwardly (i.e., downwardly in the drawing).

**[0036]** In this manner, the sealing strip rim-base 25 lines the annular channel, including the base of the lips, for retaining the tire. Under these circumstances, the seal/impermeability of the tire is improved.

**[0037]** Indeed, it has been found that for tires having beads that are not very rigid in extension or that are poorly adjusted to the nominal diameter of the rim, the tire beads are retained only by the lips when the pressure inside of the tire is relatively high. The presence of the lips 32, 33 of the sealing strip rim-base 25 under the lips 12, 13 of the flanges of the rim maintains the seal, i.e., the impermeable contact, between the tire and the sealing strip rim-base 25, and prevents air from escaping between the sealing strip rim-base 25 and the rim itself.

**[0038]** Preferably, the lips 32, 33 of the sealing strip rim-base 25 do not extend radially beyond the lips 12, 13 of the rim, so as not to interfere with the passage of the walls of the tire when the tire is mounted or dismounted, and so as not to be damaged by a tire-removing tool during these operations.

**[0039]** According to the illustrated embodiment, the sealing strip rim-base 25 is manufactured with flared walls 30 and 31 so that when the sealing strip rim-base 25 is positioned in the rim 1, these walls 30, 31 are properly pressed against the flanges 8, 9 of the rim, due to the natural elasticity of the strip. It is provided to manufacture the strip with walls that are inclined outwardly by approximately 20° with respect to the median plane of the sealing strip rim-base .

**[0040]** The sealing strip rim-base 25 shown has an inner shape that hugs, or closely follows, the contour of the annular channel of the rim, and an outer shape that facilitates the mounting, inflating, and positioning of the tire onto the rim.

**[0041]** Thus, the median depression 26, the lateral extensions 28, 29 and the walls 30 and 31 have a form and dimensions provided to hug the outer profile of the well 15, the edges 16 and 17, and the flanges 8 and 9, respectively. In particular, the lateral walls of

the depression 26 are flared to hug the flared form of the lateral walls 18 and 19 of the well 15.

**[0042]** As mentioned previously, the height of the lips 32 and 33 is such that their top is at the level of, or recessed from, the lips 12 and 13 of the rim 1. In the embodiment shown, the lips project by a predeterminate amount, such as 0.85 millimeters, with respect to the walls 30 and 31. This value is only exemplary and is not considered to be limiting of the broader scope of the invention.

**[0043]** Preferably, the lips 32, 33 have on the outside a support surface oriented perpendicularly, or substantially perpendicularly, with respect to the general direction of the walls 30, 31. Furthermore, the lips 32, 33 have a cross section that becomes narrower in the direction of the median plane 27.

**[0044]** It is contemplated, according to the invention, that the outer profile of the strip of the sealing strip rim-base 25 can have an overall form that is consistent with what is described in the patent document FR 2 766 419 and U.S. Patent No. 6,257,676, the latter of which is hereby incorporated by reference thereto, in its entirety, for this purpose. Thus, the profile has a narrow and recessed well, or radial groove, 36. The depth of the groove 36 is provided to allow the mounting of the tire, particularly the clearing of the flange by means of which the tire is mounted. The width of the groove 36 is determined depending on the thickness of the tire beads so that once they are mounted in the groove, the two tire beads can be pressed one against the other. Preferably, the lateral edges that demarcate the groove 36 are slightly flared. In this manner, at the beginning of the inflation stage, the air is allowed to remain confined in the tire, even if the inflation is carried out with a pump having a low output, such as a light-duty pump. As the pressure in the tire increases, the tire beads rise along the lateral edges of the groove.

**[0045]** The groove 36 is bordered by two ridges 37 and 38 that form maximum diameter zones that the tire beads must clear under the effect of the air pressure.

**[0046]** Beyond the ridges, the strip has seats 39, 40 on which the tire beads rest after having cleared the ridges.

**[0047]** According to the embodiment shown, the ridges project 0.6 millimeters, or approximately 0.6 millimeters, along a radial direction with respect to the seats 39, 40. This value is only exemplary, is given only as a guide, and is not considered to be limiting of the broader scope of the invention.

**[0048]** When the sealing strip rim-base 25 is mounted on the rim 1, as shown in FIG. 3, the diameter measured in the area of the seats 39 and 40 defines the nominal diameter of the wheel. This diameter has a standardized value to allow for compatibility between the wheels and the tires. The diameter of the tire in the area of its beads that are shown as 42, 43 and 44, 45, respectively, in FIG. 3 is provided depending on this nominal diameter.

**[0049]** Thus, the invention provides manufacturing the rim with a diameter in the zone of the seats which is less than the nominal diameter by twice the thickness of the sealing strip rim-base in order to get back the nominal diameter once the sealing strip rim-base is installed on the rim. In the embodiment shown, the diameter of the rim in the area of the seats is decreased by 2 millimeters with respect to the nominal diameter, and the rim base has a thickness of 1 millimeter in this zone.

**[0050]** For the valve, several methods of assembly can be appropriate.

**[0051]** According to a first method for assembly shown in FIG. 4, the sealing strip rim base has, at the base of its depression or well, an opening 46 with a diameter that is equal to or slightly smaller than the diameter of the valve 47 to avoid any clearance between the rim base and the valve in this zone.

**[0052]** A valve 47 according to what is described in the patent document FR 2 787 064 is inserted into the opening. This valve has a body and a head with an impermeable coating.

**[0053]** Another method for assembling the a valve 47 48 is shown schematically in FIG. 5. In the area of the hole 49 for the valve of the rim, the sealing strip rim base 50 has a flange 51 that projects over a height equal to or greater than the thickness of the bridge 52 in the zone of the hole 49.

**[0054]** The flange 51 is engaged in the hole 49. It ensures a mechanical connection of the sealing strip rim base 50 to the rim itself in the zone of the valve. There is also an improved impermeability in the area of the valve.

**[0055]** According to another method of construction, one could assemble the valve body to the sealing strip rim base according to an impermeable assembly, or a mechanical type assembly, or by overmolding the valve body onto the sealing strip rim base.

**[0056]** A wheel, according to the invention, includes a rim connected to a central hub via a plurality of spokes, for example, as shown in FIG. 1 of U.S. Patent No. 6,257,676, which is incorporated-by-reference thereto in its entirety for this purpose, with the rim being equipped with a sealing strip rim base in the manner disclosed herein.



[0057] FIG. 6 pertains to an alternative construction of the rim and sealing strip rim-base.

[0058] According to this alternative, the lateral walls 58 and 59 of the rim well have a projecting circular ridge 60, 61. The ridges are housed in a correspondingly formed groove 62, 63 that is in the lateral edges of the sealing strip rim-base 64 opposite the ridges. The ridge and the groove contribute to improving the mechanical connection between the sealing strip rim-base and the rim along a transverse direction. The ridge and the groove can have a serrated profile, as shown in the figure, as an optional construction, to facilitate positioning of the sealing strip rim-base 64 onto the rim and to prevent sliding.

[0059] An inverted arrangement of the ridges and grooves can also be used.

[0060] FIG. 7 shows a sealing strip rim-base 71 that provides another alternative of the sealing strips rim-bases heretofore disclosed. In this alternative, a central rib 70 is provided which projects radially from the base of the groove of the sealing strip rim-base. The central rib stiffens the structure of the sealing strip rim-base 71. In cross section, the rib has any appropriate form and, optionally, it has a tapered form as shown in the figure.

[0061] FIG. 8 shows, in a front view, the head 72 of a tool provided to facilitate the positioning of a sealing strip rim-base according to the invention in the rim. The head 72 of the tool has a centering extension 73 and two lateral extensions 74 and 75. After a rough positioning of the sealing strip rim-base in the rim, the tool is presented obliquely, with the centering extension engaged in the groove of the sealing strip rim-base.

[0062] Then the tool is oriented transversely, after which it is displaced along the perimeter of the rim. The lateral extensions 74, 75 press the raised portions of the sealing strip rim-base against the lateral flanges of the rim. Additionally, the lateral extensions are

engaged under the lips of the sealing strip ~~rim-base~~ that they force into proper position under the projections of the rim.

**[0063]** This description is given only by way of example and other embodiments of the invention could be used without leaving the scope thereof.

ABSTRACT OF THE DISCLOSURE

A sealing strip rim-base to be used with the rim of a wheel, particularly the rim of a so-called box section bicycle rim, as well as a rim equipped with such a sealing strip rim-base, and a wheel having such rim and sealing strip rim-base. The sealing strip rim-base is formed by a continuous annular strip having, in cross section, a median depression, forming a U-shaped radial groove provided to be positioned within in the central well of the rim, two lateral extensions provided to be supported upon on the interior edges of the rim that border of the well, and two lateral walls provided to extend along the flanges of the rim.

The walls of the sealing strip rim-base are extended by a pair of lips that project toward the inside relative to the walls of the sealing strip rim-base, the lips being adapted to be positioned adjacent the lips of the rim.